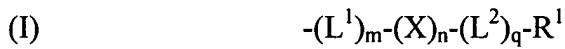


WE CLAIM:

1. A polymer prepared by polymerization of a monomer mixture, the mixture comprising:
 - (a) at least one first olefinic monomer containing an acetal or ketal linkage, the acid-catalyzed cleavage of which renders the polymer soluble in aqueous base; and
 - (b) at least one second olefinic monomer selected from (i) an olefinic monomer containing a pendant fluorinated hydroxyalkyl group R^H , (ii) an olefinic monomer containing a pendant fluorinated alkylsulfonamide group R^S , and (iii) combinations thereof.

2. The polymer of claim 1, wherein the acetal or ketal linkage is contained within an acid-cleavable substituent R^{CL} in the first olefinic monomer, the acid-cleavable substituent having the structure



in which:

m , n , and q are independently zero or 1;

L^1 is selected from C_1-C_{12} alkylene, substituted C_1-C_{12} alkylene, C_1-C_{12} heteroalkylene, substituted C_1-C_{12} heteroalkylene, and further wherein when L^1 is optionally substituted and/or heteroatom-containing C_1-C_{12} alkylene, L^1 may be linear, branched, or cyclic;

X is selected from C_3-C_{30} alicyclic and substituted C_3-C_{30} alicyclic;

L^2 is selected from C_1 - C_{12} alkylene, substituted C_1 - C_{12} alkylene, C_1 - C_{12} heteroalkylene, substituted C_1 - C_{12} heteroalkylene, and further wherein when L^2 is optionally substituted and/or heteroatom-containing C_3 - C_{12} alkylene, L^2 may be linear, branched, or cyclic; and

R^1 is selected from acetal-containing and ketal-containing substituents.

3. The polymer of claim 2, wherein:

L^1 is selected from C_1 - C_{12} alkylene, and heteroatom-containing C_1 - C_{12} alkylene;

X is C_3 - C_{18} alicyclic;

L^2 is selected from C_1 - C_{12} alkylene, hydroxyl-substituted C_1 - C_{12} alkylene, C_1 - C_{12} fluoroalkylene, and hydroxyl-substituted C_1 - C_{12} fluoroalkylene; and

R^1 has the structure -(CO)-O-CR⁴R⁵-O-CR⁶R⁷R⁸ in which R⁴, R⁵, R⁶, R⁷, and R⁸ are selected so as to render R^1 acid-cleavable.

4. The polymer of claim 3, wherein:

R^4 , R^5 , R^6 , R^7 , and R^8 are independently selected from hydrogen, C_4 - C_{12} hydrocarbyl, substituted C_4 - C_{12} hydrocarbyl, heteroatom-containing C_4 - C_{12} hydrocarbyl, and substituted heteroatom-containing C_4 - C_{12} hydrocarbyl, and further wherein any two of R^4 , R^5 , R^6 , R^7 , and R^8 may be linked to form a cyclic group.

5. The polymer of claim 4, wherein:

L^1 is selected from C_1 - C_{12} alkylene, and heteroatom-containing C_1 - C_{12} alkylene;

X is C_6 - C_{12} alicyclic; and

L^2 is of the formula $-CR^9R^{10}-$ wherein R^9 is hydrogen, C_1 - C_{12} alkyl, or C_1 - C_{12} fluoroalkyl, and R^{10} is C_1 - C_{12} alkyl or C_1 - C_{12} fluoroalkyl.

6. The polymer of claim 1, wherein the second olefinic monomer contains a pendant fluorinated hydroxyalkyl group R^H .

7. The polymer of claim 6, wherein R^H has the structure $-L^3-CR^{11}R^{12}-OH$, in which:

L^3 is selected from C_1 - C_{12} alkylene, substituted C_1 - C_{12} alkylene, C_1 - C_{12} heteroalkylene, substituted C_1 - C_{12} heteroalkylene, C_3 - C_{15} alicyclic, C_3 - C_{15} fluoroalicyclic, and combinations thereof;

R^{11} is selected from hydrogen, C_1 - C_{24} alkyl, and substituted C_1 - C_{24} alkyl; and

R^{12} is C_1 - C_{24} alkyl or fluorinated C_1 - C_{24} alkyl, with the proviso that at least one of R^{11} and R^{12} is fluorinated; and further wherein R^{11} and R^{12} can be taken together to form a ring.

8. The polymer of claim 7, wherein R^{11} is selected from hydrogen, C_1 - C_{12} alkyl, and C_1 - C_{12} haloalkyl, and R^{12} is C_1 - C_{12} alkyl or fluorinated C_1 - C_{12} alkyl.

9. The polymer of claim 8, wherein R^{11} is selected from hydrogen, C_1 - C_8 alkyl, and fluorinated C_1 - C_8 alkyl, and R^{12} is C_1 - C_8 alkyl or fluorinated C_1 - C_8 alkyl.

10. The polymer of claim 9, wherein R^{11} is selected from hydrogen, C_1 - C_4 alkyl, semi-fluorinated C_1 - C_4 alkyl, and perfluorinated C_1 - C_4 alkyl, and R^{12} is C_1 - C_4 alkyl, semi-fluorinated C_1 - C_4 alkyl, or perfluorinated C_1 - C_4 alkyl.

11. The polymer of claim 10, wherein R¹¹ and R¹² are both trifluoromethyl.

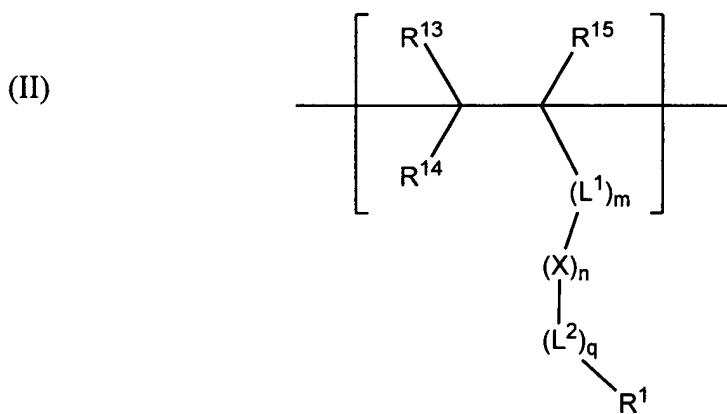
12. The polymer of claim 1, wherein the second olefinic monomer contains a pendant fluorinated alkylsulfonamide group R^S.

13. The polymer of claim 12, wherein R^S has the structure -L³-SO₂-NHR¹⁶, in which:

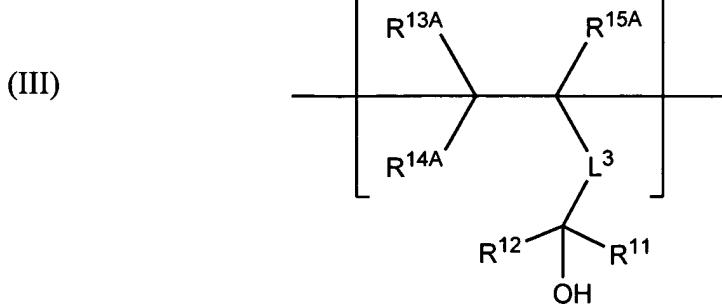
L³ is selected from C₁-C₁₂ alkylene, substituted C₁-C₁₂ alkylene, C₁-C₁₂ heteroalkylene, substituted C₁-C₁₂ heteroalkylene, C₃-C₁₅ alicyclic, C₃-C₁₅ fluoroalicyclic, combinations thereof; and

R¹⁶ is selected from C₁-C₂₄ alkyl and substituted C₁-C₂₄ alkyl, C₁-C₂₄ fluoroalkyl and substituted C₁-C₂₄ fluoroalkyl.

14. A polymer comprising a first olefinic monomer unit having the structure of formula (II)



and a second olefinic monomer unit having the structure of formula (III)



wherein:

m, n, and q are independently zero or 1;

L^1 is selected from C_1-C_{12} alkylene, substituted C_1-C_{12} alkylene, C_1-C_{12} heteroalkylene, substituted C_1-C_{12} heteroalkylene, and further wherein when L^1 is optionally substituted and/or heteroatom-containing C_1-C_{12} alkylene, L^1 may be linear, branched, or cyclic;

X is selected from C_3-C_{30} alicyclic and substituted C_3-C_{30} alicyclic;

L^2 is selected from C_1-C_{12} alkylene, substituted C_1-C_{12} alkylene, C_1-C_{12} heteroalkylene, substituted C_1-C_{12} heteroalkylene, and further wherein when L^2 is optionally substituted and/or heteroatom-containing C_3-C_{12} alkylene, L^2 may be linear, branched, or cyclic; and

R^1 is selected from acetal-containing and ketal-containing substituents;

L^3 is selected from C_1-C_{12} alkylene, substituted C_1-C_{12} alkylene, C_1-C_{12} heteroalkylene, substituted C_1-C_{12} heteroalkylene, C_3-C_{15} alicyclic, C_3-C_{15} fluoroalicyclic, and combinations thereof;

R^{11} is selected from hydrogen, C_1-C_{24} alkyl, and substituted C_1-C_{24} alkyl;

R^{12} is C_1-C_{24} alkyl or fluorinated C_1-C_{24} alkyl, with the proviso that at least one of R^{11} and R^{12} is fluorinated; and further wherein R^{11} and R^{12} can be taken together to form a ring;

R^{13} and R^{13A} are independently selected from hydrogen, fluorine, C_1-C_{24} alkyl, substituted C_1-C_{24} alkyl, C_1-C_{24} alkoxy, and substituted C_1-C_{24} alkoxy; and

R^{14} and R^{14A} are independently selected from hydrogen, fluorine, C₁-C₂₄ alkyl and substituted C₁-C₂₄ alkyl; and

R^{15} and R^{15A} are independently selected from hydrogen, fluorine, C₁-C₂₄ alkyl, and substituted C₁-C₂₄ alkyl, and further wherein any two of L¹, R¹³, R¹⁴, and R¹⁵ may be taken together to form a ring and any two of L³, R^{13A}, R^{14A}, and R^{15A} may be taken together to form a ring.

15. The polymer of claim 14, wherein

L¹ is selected from C₁-C₁₂ alkylene, and heteroatom-containing C₁-C₁₂ alkylene;

X is C₃-C₁₈ alicyclic;

L² is selected from C₁-C₁₂ alkylene, hydroxyl-substituted C₁-C₁₂ alkylene, C₁-C₁₂ fluoroalkylene, and hydroxyl-substituted C₁-C₁₂ fluoroalkylene;

R¹ has the structure -(CO)-O-CR⁴R⁵-O-CR⁶R⁷R⁸ in which R⁴, R⁵, R⁶, R⁷, and R⁸ are selected so as to render R¹ acid-cleavable;

R¹¹ is selected from hydrogen, C₁-C₁₂ alkyl, and C₁-C₁₂ haloalkyl; and

R¹² is C₁-C₁₂ alkyl or fluorinated C₁-C₁₂ alkyl; and further wherein R¹¹ and R¹² can be taken together to form a ring.

16. The polymer of claim 15, wherein

R⁴, R⁵, R⁶, R⁷, and R⁸ are independently selected from hydrogen, C₄-C₁₂ hydrocarbyl, substituted C₄-C₁₂ hydrocarbyl, heteroatom-containing C₄-C₁₂ hydrocarbyl, and substituted heteroatom-containing C₄-C₁₂ hydrocarbyl, and further wherein any two of R⁴, R⁵, R⁶, R⁷, and R⁸ may be linked to form a cyclic group;

R¹¹ is selected from hydrogen, C₁-C₈ alkyl, and fluorinated C₁-C₈ alkyl; and R¹² is C₁-C₈ alkyl or fluorinated C₁-C₈ alkyl; and further wherein R¹¹ and R¹² can be taken together to form a ring.

17. The polymer of claim 16, wherein

L¹ is selected from C₁-C₆ alkylene, and heteroatom-containing C₁-C₆ alkylene;

X is C₆-C₁₂ alicyclic; and

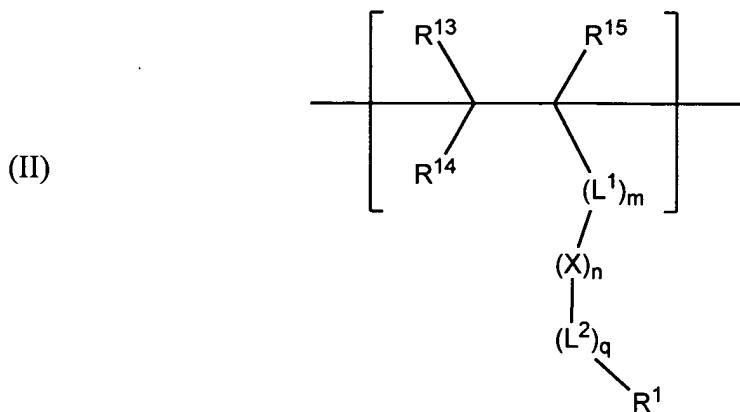
L² is of the formula -CR⁹R¹⁰- wherein R⁹ is hydrogen, C₁-C₁₂ alkyl, or C₁-C₁₂ fluoroalkyl, and R¹⁰ is C₁-C₁₂ alkyl or C₁-C₁₂ fluoroalkyl;

R¹¹ is selected from hydrogen, C₁-C₄ alkyl, semi-fluorinated C₁-C₄ alkyl, and perfluorinated C₁-C₄ alkyl; and

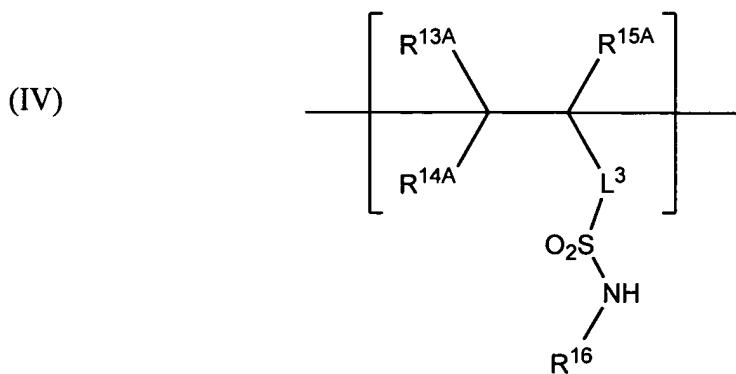
R¹² is C₁-C₄ alkyl, semi-fluorinated C₁-C₄ alkyl, or perfluorinated C₁-C₄ alkyl.

18. The polymer of claim 17, wherein R¹¹ and R¹² are both trifluoromethyl.

19. A polymer comprising a first olefinic monomer unit having the structure of formula (II)



and a second olefinic monomer unit having the structure of formula (IV)



wherein:

m, n, and q are independently zero or 1;

L¹ is selected from C₁-C₁₂ alkylene, substituted C₁-C₁₂ alkylene, C₁-C₁₂ heteroalkylene, substituted C₁-C₁₂ heteroalkylene, and further wherein when L¹ is optionally substituted and/or heteroatom-containing C₁-C₁₂ alkylene, L¹ may be linear, branched, or cyclic;

X is selected from C₃-C₃₀ alicyclic and substituted C₃-C₃₀ alicyclic;

L² is selected from C₁-C₁₂ alkylene, substituted C₁-C₁₂ alkylene, C₁-C₁₂ heteroalkylene, substituted C₁-C₁₂ heteroalkylene, and further wherein when L² is optionally substituted and/or heteroatom-containing C₃-C₁₂ alkylene, L² may be linear, branched, or cyclic; and

R¹ is selected from acetal-containing and ketal-containing substituents;

L³ is selected from C₁-C₁₂ alkylene, substituted C₁-C₁₂ alkylene, C₁-C₁₂ heteroalkylene, substituted C₁-C₁₂ heteroalkylene, C₃-C₁₅ alicyclic, C₃-C₁₅ fluoroalicyclic, and combinations thereof;

R¹³ and R^{13A} are independently selected from hydrogen, fluorine, C₁-C₂₄ alkyl, substituted C₁-C₂₄ alkyl, C₁-C₂₄ alkoxy, and substituted C₁-C₂₄ alkoxy; and

R¹⁴ and R^{14A} are independently selected from hydrogen, fluorine, C₁-C₂₄ alkyl and substituted C₁-C₂₄ alkyl;

R¹⁵ and R^{15A} are independently selected from hydrogen, fluorine, C₁-C₂₄ alkyl, and substituted C₁-C₂₄ alkyl, and further wherein any two of L¹, R¹³, R¹⁴, and R¹⁵ may be taken together to form a ring and any two of L³, R^{13A}, R^{14A}, and R^{15A} may be taken together to form a ring; and

R¹⁶ is selected from C₁-C₂₄ alkyl and substituted C₁-C₂₄ alkyl, C₁-C₂₄ fluoroalkyl and substituted C₁-C₂₄ fluoroalkyl.

20. The polymer of claim 19, wherein:

L¹ is selected from C₁-C₁₂ alkylene, and heteroatom-containing C₁-C₁₂ alkylene;

X is C₃-C₁₈ alicyclic;

L² is selected from C₁-C₁₂ alkylene, hydroxyl-substituted C₁-C₁₂ alkylene, C₁-C₁₂ fluoroalkylene, and hydroxyl-substituted C₁-C₁₂ fluoroalkylene; and

R¹ has the structure -(CO)-O-CR⁴R⁵-O-CR⁶R⁷R⁸ in which R⁴, R⁵, R⁶, R⁷, and R⁸ are selected so as to render R¹ acid-cleavable.

21. The polymer of claim 20, wherein

R⁴, R⁵, R⁶, R⁷, and R⁸ are independently selected from hydrogen, C₄-C₁₂ hydrocarbyl, substituted C₄-C₁₂ hydrocarbyl, heteroatom-containing C₄-C₁₂ hydrocarbyl, and substituted heteroatom-containing C₄-C₁₂ hydrocarbyl, and further wherein any two of R⁴, R⁵, R⁶, R⁷, and R⁸ may be linked to form a cyclic group.

22. The polymer of claim 21, wherein

L^1 is selected from C_1 - C_6 alkylene, and heteroatom-containing C_1 - C_6 alkylene;

X is C_6 - C_{12} alicyclic; and

L^2 is of the formula $-CR^9R^{10}-$, wherein R^9 is hydrogen, C_1 - C_{12} alkyl, or C_1 - C_{12}

fluoroalkyl, and R^{10} is C_1 - C_{12} alkyl or C_1 - C_{12} fluoroalkyl.

23. The polymer of claim 1, wherein the monomer mixture comprises two or more

different first olefinic monomers.

24. The polymer of claim 1, wherein the monomer mixture further comprises at least one

additional olefinic monomer.

25. The polymer of claim 23, wherein monomer mixture further comprises at least one

additional olefinic monomer.

26. The polymer of claim 24, wherein the at least one additional olefinic monomer is

selected from (i) a monomer containing an acid-cleavable substituent R^{CL*} ; (ii) a monomer

containing an acid-inert, polar substituent, R^P ; (iii) a monomer containing an acid-inert, nonpolar

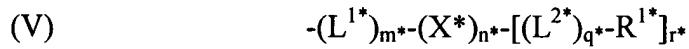
substituent, R^{NP} ; and (iv) combinations thereof.

27. The polymer of claim 26, comprising monomer units substituted with R^P and

optionally R^{NP} .

28. The polymer of claim 26, comprising monomer units substituted with R^{NP} and optionally R^P .

29. The polymer of claim 26, wherein R^{CL*} has the structure



in which:

m^* , n^* , and q^* are independently zero or 1;

r^* is an integer of at least 1;

L^{1*} is selected from C_1-C_{12} alkylene, substituted C_1-C_{12} alkylene, C_1-C_{12} heteroalkylene, substituted C_1-C_{12} heteroalkylene, and further wherein when L^{1*} is optionally substituted and/or heteroatom-containing C_1-C_{12} alkylene, L^{1*} may be linear, branched, or cyclic;

X^* is selected from C_3-C_{30} alicyclic and substituted C_3-C_{30} alicyclic;

L^{2*} is selected from C_1-C_{12} alkylene, substituted C_1-C_{12} alkylene, C_1-C_{12} heteroalkylene, substituted C_1-C_{12} heteroalkylene, and further wherein when L^{2*} is optionally substituted and/or heteroatom-containing C_3-C_{12} alkylene, L^{2*} may be linear, branched, or cyclic; and

R^{1*} is selected from acid-cleavable ester, oligomeric ester, ether, carbonate, and orthoester substituents.

30. The polymer of claim 29, wherein:

r^* is 1 or 2;

L^{1*} is selected from C_1-C_{12} alkylene, and heteroatom-containing C_1-C_{12} alkylene;

X* is C₃-C₁₈ alicyclic;

L^{2*} is selected from C₁-C₁₂ alkylene, hydroxyl-substituted C₁-C₁₂ alkylene, C₁-C₁₂ fluoroalkylene, and hydroxyl-substituted C₁-C₁₂ fluoroalkylene; and

R^{1*} is selected from -(CO)-O-R^{4*}, -[Q^{1*}-(CO)-O-]_{h*}-R^{5*}, -O-R^{6*}, and -O-(CO)-O-R^{7*};

h* is an integer in the range of 2 to 8 inclusive,

Q^{1*} is C₁-C₁₂ alkylene or C₁-C₁₂ fluoroalkylene,

R^{4*} and R^{6*} are selected from (a) hydrocarbyl substituents with a tertiary carbon attachment point, (b) substituents having the structure -CR^{8*}R^{9*}-O-CR^{10*}R^{11*}R^{12*}, and (c) substituents having the structure -CR^{13*}(OR^{14*})₂;

R^{5*}, R^{7*}, and R^{14*} are selected from C₄-C₁₂ hydrocarbyl, substituted C₄-C₁₂ hydrocarbyl, heteroatom-containing C₄-C₁₂ hydrocarbyl, and substituted heteroatom-containing C₄-C₁₂ hydrocarbyl; and

R^{8*}, R^{9*}, R^{10*}, R^{11*}, R^{12*}, and R^{13*} are independently selected from hydrogen, C₄-C₁₂ hydrocarbyl, substituted C₄-C₁₂ hydrocarbyl, heteroatom-containing C₄-C₁₂ hydrocarbyl, and substituted heteroatom-containing C₄-C₁₂ hydrocarbyl, and further wherein any two of R^{8*}, R^{9*}, R^{10*}, R^{11*}, and R^{12*} may be linked to form a cyclic group.

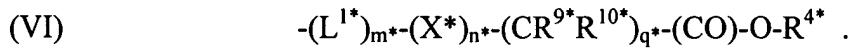
31. The polymer of claim 30, wherein:

L^{1*} is selected from C₁-C₆ alkylene, and heteroatom-containing C₁-C₆ alkylene;

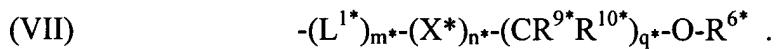
X* is C₆-C₁₂ alicyclic; and

L^{2*} is of the formula -CR^{9*}R^{10*}-, wherein R^{9*} is hydrogen, C₁-C₁₂ alkyl, or C₁-C₁₂ fluoroalkyl, and R^{10*} is C₁-C₁₂ alkyl or C₁-C₁₂ fluoroalkyl.

32. The polymer of claim 31, wherein R^{1*} is of the formula $-(CO)-O-R^{4*}$, wherein R^{4*} is selected from cyclic and acyclic hydrocarbyl substituents with a tertiary carbon attachment point, such that when r^* is 1, then R^{CL*} has the structure



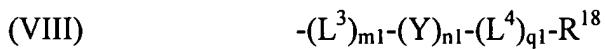
33. The polymer of claim 31, wherein R^{1*} is of the formula $-O-R^{6*}$, wherein R^{6*} is selected from cyclic and acyclic hydrocarbyl substituents with a tertiary carbon attachment point, such that when r^* is 1, then R^{CL*} has the structure



34. The polymer of claim 32, wherein R^{4*} is selected from t-butyl, 2-methyl-2-norbornyl, 2-methyl-2-adamantyl, 2-ethyl-2-adamantyl, isobornyl, 2-methyl-2-isobornyl, 2-methyl-2-tetracyclododecyl, 1-methylcyclohexyl, 1-ethylcyclohexyl, 1-butylcyclohexyl, 1-methylcyclopentyl, 1-ethylcyclopentyl, and 1-butylcyclopentyl.

35. The polymer of claim 33, wherein R^{6*} is selected from t-butyl, 2-methyl-2-norbornyl, 2-methyl-2-adamantyl, 2-ethyl-2-adamantyl, isobornyl, 2-methyl-2-isobornyl, 2-methyl-2-tetracyclododecyl, 1-methylcyclohexyl, 1-ethylcyclohexyl, 1-butylcyclohexyl, 1-methylcyclopentyl, 1-ethylcyclopentyl, and 1-butylcyclopentyl.

36. The polymer of claim 26, wherein R^P has the structure



in which:

m1, n1, and q1 are independently zero or 1;

L³ is selected from C₁-C₁₂ alkylene, substituted C₁-C₁₂ alkylene, C₁-C₁₂ heteroalkylene, substituted C₁-C₁₂ heteroalkylene, and further wherein when L³ is optionally substituted and/or heteroatom-containing C₁-C₁₂ alkylene, L¹ may be linear, branched, or cyclic;

Y is selected from C₃-C₃₀ alicyclic and substituted C₃-C₃₀ alicyclic;

L⁴ is selected from C₁-C₁₂ alkylene, substituted C₁-C₁₂ alkylene, C₁-C₁₂ heteroalkylene, substituted C₁-C₁₂ heteroalkylene, and further wherein when L⁴ is optionally substituted and/or heteroatom-containing C₃-C₁₂ alkylene, L⁴ may be linear, branched, or cyclic; and

R¹⁸ is an acid-inert polar organic group containing a heteroatom with a Pauling electronegativity greater than about 3.00.

37. The polymer of claim 36, wherein:

L³ is selected from C₁-C₁₂ alkylene, and heteroatom-containing C₁-C₁₂ alkylene;

Y is C₃-C₁₈ alicyclic; and

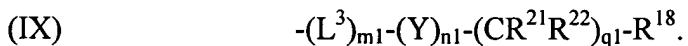
L⁴ is selected from C₁-C₁₂ alkylene, hydroxyl-substituted C₁-C₁₂ alkylene, C₁-C₁₂ fluoroalkylene, and hydroxyl-substituted C₁-C₁₂ fluoroalkylene.

38. The polymer of claim 37, wherein:

L³ is selected from C₁-C₆ alkylene, and heteroatom-containing C₁-C₆ alkylene;

Y is C₆-C₁₂ alicyclic; and

L⁴ is of the formula -CR²¹CR²²- wherein R²¹ is hydrogen, C₁-C₁₂ alkyl, or C₁-C₁₂ fluoroalkyl, and R²² is C₁-C₁₂ alkyl or C₁-C₁₂ fluoroalkyl, such that R^P has the structure

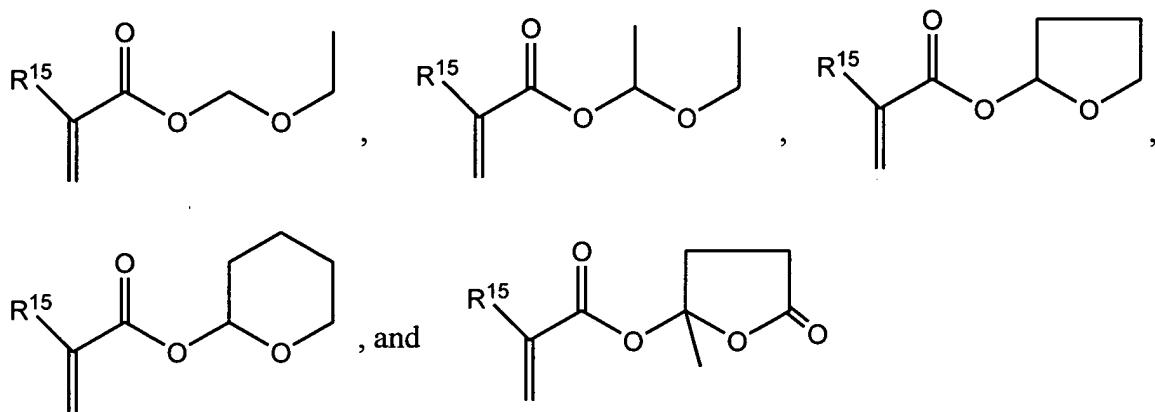


39. The polymer of claim 38, wherein the heteroatom within R¹⁸ is O or N.

40. The polymer of claim 39, wherein R¹⁸ is selected from hydroxyl, carboxyl, C₁-C₁₂ alkoxy, C₁-C₁₂ fluoroalkoxy, hydroxyl-substituted C₁-C₁₂ alkoxy, hydroxyl-substituted C₁-C₁₂ fluoroalkoxy, C₂-C₁₂ alkoxyalkyl, fluorinated C₂-C₁₂ alkoxyalkyl, hydroxyl-substituted C₂-C₁₂ alkoxyalkyl, fluorinated hydroxyl-substituted C₂-C₁₂ alkoxyalkyl, hydroxyl-substituted C₁-C₁₂ alkyl, hydroxyl-substituted C₁-C₁₂ fluoroalkyl, carboxyl-substituted C₁-C₁₂ alkyl, carboxyl-substituted C₁-C₁₂ fluoroalkyl, C₂-C₁₂ acyl, fluorinated C₂-C₁₂ acyl, hydroxyl-substituted C₂-C₁₂ acyl, fluorinated hydroxyl-substituted C₂-C₁₂ acyl, C₂-C₁₂ acyloxy, fluorinated C₂-C₁₂ acyloxy, hydroxyl-substituted C₂-C₁₂ acyloxy, fluorinated hydroxyl-substituted C₂-C₁₂ acyloxy, amino, mono- and di-(C₁-C₁₂ alkyl)-substituted amino, amido, mono- and di-(C₂-C₁₂ alkyl)amido, sulfonamido, N-heteroalicyclic, oxo-substituted N-heterocyclic, and, where the substituents permit, combinations of two or more of the foregoing.

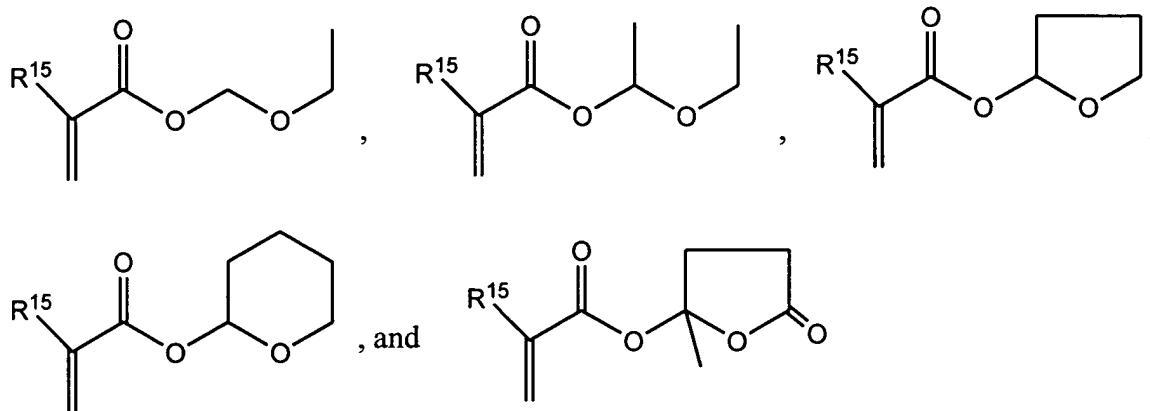
41. The polymer of claim 26, wherein R^P is selected from lactone, anhydride, sulfonamide, fluoroalkanol, alkanol, alicyclic alkanol, esters, ethers, and a combination thereof.
42. The polymer of claim 26, wherein R^{NP} is C_1-C_{18} hydrocarbyl or fluorinated C_1-C_{18} hydrocarbyl.

43. The polymer of claim 14, wherein the first olefinic monomer unit is derived from a monomer having a structure selected from the formulae



44. The polymer of claim 43, wherein R^{15} is selected from hydrogen, fluorine, C_1-C_{24} alkyl, and fluorinated C_1-C_{24} alkyl.

45. The polymer of claim 19, wherein the first olefinic monomer unit is derived from a monomer having a structure selected from the formulae



46. The polymer of claim 45, wherein R¹⁵ is selected from hydrogen, fluorine, C₁-C₂₄ alkyl, and fluorinated C₁-C₂₄ alkyl.

47. A lithographic photoresist composition comprising the polymer of claim 1 and a photoacid generator.

48. The composition of claim 47, further comprising an additive selected from dissolution modifying additives, basic compounds, photospeed control agents, crosslinking agents, surfactants, adhesion promoters, and anti-foaming agents.

49. The composition of claim 48, wherein the dissolution modifying additive is a dissolution inhibitor.

50. The composition of claim 47, further comprising an additional polymer.

51. The composition of claim 50, wherein the polymer is selected from fluorine-containing polymers and non-fluorine-containing polymers.
52. The composition of claim 47, further comprising a solvent.
53. The composition of claim 47, wherein the photoacid generator is an onium salt selected from sulfonium salts and iodonium salts.
54. A lithographic photoresist composition comprising the polymer of claim 14 and a photoacid generator.
55. A lithographic photoresist composition comprising the polymer of claim 19 and a photoacid generator.
56. A polymer blend composition comprising the polymer of claim 1 and at least one additional polymer.